

## DESCRIPTION

SAFETY PROTECTION INSTRUMENTATION SYSTEM AND METHOD OF  
OPERATING THE SYSTEM

## Technical Field

The present invention relates to a safety protection instrumentation system that includes a reliable digital signal processing apparatus and is used in, for example, a safety protection system in a nuclear plant. The invention also relates to a method of operating or handling the safety protection instrumentation system.

## Background Art

Nuclear plants are provided with safety protection instrumentation systems for preventing or suppressing failures that can degrade the safety of the plants, or that are expected to occur. A radiation measuring apparatus in the safety protection instrumentation system is intended to provide each operating circuit with information indicating conditions for isolating parts where the radiation dose has increased, or actuating emergency gas treatment apparatus in order to suppress radioactive material from leaking outside the plant if the radiation dose in the plant has increased for any reason.

In recent plants, a digital signal processing technology is applied to these radiation-measuring apparatuses in the safety protection instrumentation systems. In the digital signal processing, CPUs perform digital calculation involving a digital filter and/or multiple signals (for example, refer to Japanese Patent Application No. 2653522). In contrast, there are systems using ASIC/FPGA (Application Specific Integrated Circuit/Field Programmable Gate Array), which is hardware logic, without using the CPUs (for example, refer to USP No. 5859884). In such systems, instead of the CPUs, ASICs control the procedures to simplify the operations.